

IN THE CLAIMS:

Please amend claims 1, 11, 35, 44, 47, 51-55 and 65, and add new claim 73. The marked-up copy of the amended and new claims is attached. A clean copy of the pending claims is as follows:

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1. (Twice Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:
a housing adapted for use on an exterior of the body;
a receiver coupled to the housing for receiving remotely generated commands;
a processor coupled to the housing and the receiver to receive remotely generated commands and to control the external infusion device in accordance with the commands; and
an indication device, providing at least one of a visual indication, an audible indication or a tactile indication, to indicate when a command has been received and indicate when the command is being utilized to control the external infusion device such that the external infusion device is capable of being concealed from view on an individual when being remotely commanded.
2. An external infusion device according to claim 1, wherein the external infusion device includes a memory for storing programs, and wherein the receiver is capable of receiving software updates and facilitating remote programming of external infusion device capabilities.
3. An external infusion device according to claim 1, wherein the external infusion device includes a memory for storing a patient infusion history and pump activity.
4. An external infusion device according to claim 1, wherein the remotely generated commands are capable of programming and activating an audio bolus delivery of the liquid by the external infusion device.
5. An external infusion device according to claim 1, wherein the remotely generated commands are capable of programming and activating a vibration bolus delivery of the liquid by

the external infusion device.

6. An external infusion device according to claim 1, wherein the remotely generated commands are capable of programming and activating a temporary basal rate delivery of the liquid by the external infusion device.
7. An external infusion device according to claim 1, wherein the remotely generated commands are capable of programming and suspending delivery of the liquid by the external infusion device.
8. An external infusion device according to claim 1, wherein the remotely generated commands are capable of programming and activating an extended bolus delivery of the liquid by the external infusion device.
9. An external infusion device according to claim 1, wherein the remotely generated commands are capable of programming and activating a dual wave bolus delivery of the liquid by the external infusion device.
10. An external infusion device according to claim 1, wherein the remotely generated commands are capable of programming and activating a profiled bolus delivery of the liquid by the external infusion device.

11. (Twice Amended) An infusion system for infusing a liquid into a body, the infusion system comprising:

an external infusion device including:

a housing adapted for use on an exterior of the body;

a receiver coupled to the housing and for receiving remotely generated commands;

a processor coupled to the housing and the receiver to receive remotely generated commands and to control the external infusion device in accordance with the commands; and

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an indication device, providing at least one of a visual indication, an audible indication or a tactile indication, to indicate when a command has been received and indicate when the command is being utilized to control the external infusion device such that the external infusion device is capable of being concealed when being remotely commanded; and

a remote commander including:

a commander housing;

a keypad coupled to the commander housing for inputting commands; and

a transmitter coupled to the keypad for wirelessly transmitting commands to the receiver of the external infusion device.

12. An infusion system according to claim 11, wherein the external infusion device further includes a device transmitter to verify receipt of commands from the remote commander, wherein the remote commander further includes a remote receiver to receive the verification from the device transmitter of the external infusion device, and wherein the remote commander further includes a remote indication device to indicate receipt of the verification from the external infusion device.

13. An infusion system according to claim 11, wherein the remote commander is sized to fit on a key ring.

14. An infusion system according to claim 11, wherein the remote commander uses RF frequencies to transmit remote commands to the external infusion device.

15. An infusion system according to claim 11, wherein the remote commander uses IR frequencies to transmit remote commands to the external infusion device.
16. An infusion system according to claim 11, wherein the remote commander uses optical frequencies to transmit remote commands to the external infusion device.
17. An infusion system according to claim 11, wherein the remote commander uses ultrasonic frequencies to transmit remote commands to the external infusion device.
18. An infusion system according to claim 11, wherein the remote commander uses audio frequencies to transmit remote commands to the external infusion device.
19. An infusion system according to claim 11, wherein the remote commander uses magnetic effects to transmit remote commands to the external infusion device.
20. An infusion system according to claim 11, wherein the remote commander is capable of providing remote commands at a distance greater than 1 inch.
21. An infusion system according to claim 11, wherein the processor of the external infusion device has a unique identification code, and wherein the remote commander includes the capability to read and learn the unique identification code of the external infusion device, and wherein the remote commander and the external infusion device use the unique identification code to substantially avoid interference with other external infusion devices.
22. An infusion system according to claim 11, wherein the remote commander has a unique identification code, and wherein the processor of the external infusion device includes the capability to read and learn the unique identification code of the remote commander, and wherein the remote commander and the external infusion device use the unique identification code to substantially avoid interference with other remote commanders.

23. An infusion system according to claim 11, wherein the remote commander includes a mode that permits physician controlled programming of specific capabilities of the external infusion device to the exclusion of the user.
24. An infusion system according to claim 11, wherein the remote commander may also include a link to a computer to allow computer programming to initiate or alter available capabilities of the external infusion device.
25. An infusion system according to claim 11, wherein the external infusion device includes a memory for storing programs, and wherein the receiver is capable of receiving software updates to facilitate remote programming of external infusion device capabilities.
26. An infusion system according to claim 11, wherein the remote commander is capable of receiving data from another medical device and relaying the received data to the external infusion device.
27. An infusion system according to claim 26, wherein the remote commander is capable of remotely commanding and controlling the other medical device.
28. An infusion system according to claim 11, wherein the remote commander is capable of programming and activating an audio bolus delivery of the liquid by the external infusion device.
29. An infusion system according to claim 11, wherein the remote commander is capable of programming and activating a vibration bolus delivery of the liquid by the external infusion device.
30. An infusion system according to claim 11, wherein the remote commander is capable of programming and activating a temporary basal rate delivery of the liquid by the external infusion device.

31. An infusion system according to claim 11, wherein the remote commander is capable of programming and suspending delivery of the liquid by the external infusion device.

32. An infusion system according to claim 11, wherein the remote commander is capable of programming and activating an extended bolus delivery of the liquid by the external infusion device.

33. An infusion system according to claim 11, wherein the remote commander is capable of programming and activating a profiled bolus delivery of the liquid by the external infusion device.

34. An infusion system according to claim 11, wherein the remote commander is capable of programming and activating a dual wave bolus delivery of the liquid by the external infusion device.

35. (Twice Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

a housing adapted for use on an exterior of the body;

a processor coupled to the housing;

a bolus estimator used in conjunction with the processor and externally supplied values to estimate an amount of liquid to be infused based upon an estimate of a material to be ingested by the body; and

an indication device, providing at least one of a visual indication, an audible indication or a tactile indication, to indicate when an amount of fluid to be infused has been calculated.

36 An external infusion device according to claim 35, wherein the bolus estimator includes the capability to calculate a correction bolus based upon a current characteristic value and a target characteristic value.

37. An external infusion device according to claim 36, wherein the bolus estimator includes a liquid sensitivity that is used to determine the amount of liquid to be infused to calculate the correction bolus.

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38. (Amended) An external infusion device according to claim 37, wherein the liquid to be infused is insulin, and where the material to be ingested is carbohydrates.

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39. (Amended) An external infusion device according to claim 35, wherein the liquid to be infused is insulin, and where the material to be ingested is carbohydrates.

40. An external infusion device according to claim 35, wherein the bolus estimator includes a lockout to prevent the calculation of a bolus for a predetermined period of time after a bolus estimated by the bolus estimator.

41. An external infusion device according to claim 35, wherein the supplied values are codes representing a carbohydrate value of specific foods.

42. An external infusion device according to claim 35, wherein the supplied values are codes representing a carbohydrate value of specific meals.

43. An external infusion device according to claim 35, further including a duration factor to determine a value of how long a previously infused amount of liquid will remain active in the body, wherein the determined value is used to adjust the amount of the fluid to be infused.

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44. (Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

a housing containing a reservoir, wherein the housing is adapted for use on an exterior of the body;

a processor coupled to the housing; and

a vibration alarm used in conjunction with the processor to provide an alarm, and to generate sufficient vibration to assist in removing gas bubbles from the fluid in the reservoir during priming of the external infusion device.

45. An external infusion device according to claim 44, wherein the vibration alarm is used to agitate the fluid in the reservoir in between successive delivery periods of the fluid by the external infusion device.

46. An external infusion device according to claim 44, wherein the vibration alarm is used to agitate the fluid in the reservoir during delivery of the fluid by the external infusion device.

47. (Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

 a housing containing a reservoir, wherein the housing is adapted for use on an exterior of the body;

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 a processor coupled to the housing;

 an audible alarm coupled to the processor; and

 a vibration alarm used in conjunction with the processor and the audible alarm to provide an alarm.

48. An external infusion device according to claim 47, wherein the vibration alarm is also used to agitate the fluid in the reservoir in between successive delivery periods of the fluid by the external infusion device.

49. An external infusion device according to claim 47, wherein the vibration alarm is also used to agitate the fluid in the reservoir during delivery of the fluid by the external infusion device.

50. An external infusion device according to claim 47, wherein the processor selects to activate one of the audible alarm and vibration alarm independently of the unselected alarm.

51. (Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

 a housing adapted for use on an exterior of the body;

 a processor coupled to the housing;

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 a keypad coupled to the housing and used in conjunction with the processor to determine an estimate of remaining battery power; and

 an indication device, providing at least one of a visual indication, an audible indication or a tactile indication, to indicate the estimate of remaining battery power.

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52. (Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

a housing adapted for use on an exterior of the body;

a processor coupled to the housing;

a memory coupled to and used in conjunction with the processor to store at least two personal delivery patterns;

a keypad coupled to the housing and used in conjunction with the processor to select one of the at least two personal delivery patterns; and

an indication device to indicate the selected personal delivery pattern,

wherein the processor controls the external infusion device in accordance with the selected one of the at least two personal delivery patterns.

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53. (Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

a housing adapted for use on an exterior of the body;

a receiver coupled to the housing for receiving remotely generated commands;

a processor coupled to the housing;

a memory coupled to and used in conjunction with the processor to store at least two personal delivery patterns, wherein the processor is coupled to the receiver to receive the remotely generated commands and to control the external infusion device in accordance with the commands to select one of the at least two personal delivery patterns; and

an indication device to indicate the selected personal delivery pattern and when a command has been received to control the external infusion device in accordance with the selected personal delivery pattern such that the external infusion device is capable of being concealed from view when being remotely commanded,

wherein the processor controls the external infusion device in accordance with the selected one of the at least two personal delivery patterns.

54. (Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

a housing adapted for use on an exterior of the body;

a processor coupled to the housing;

a memory coupled to and used in conjunction with the processor to store at least two basal rate profiles;

a keypad coupled to the housing and used in conjunction with the processor to program the at least two basal rate profiles; and

an indication device to indicate the basal rate profiles during programming,

wherein the processor controls the external infusion device in accordance with the programmed at least two basal rate profiles.

55. (Amended) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

a housing adapted for use on an exterior of the body;

a processor coupled to the housing;

a memory coupled to and used in conjunction with the processor to store at least two bolus types;

a keypad coupled to the housing and used in conjunction with the processor to select one of the at least two bolus types; and

an indication device to indicate the selected bolus type,

wherein the processor controls the external infusion device in accordance with the selected one of the at least two bolus types.

56. An external infusion device according to claim 1, wherein the indication device produces an audible indication.

57. An external infusion device according to claim 1, wherein the indication device produces a vibratory indication.

58. An external infusion device according to claim 11, wherein the remote commander is portable.

59. An infusion system according to claim 11, wherein the remote commander is one or more remote commanders and each of the one or more remote commanders includes:
a commander housing;
a keypad coupled to the commander housing for inputting commands; and
a transmitter coupled to the keypad for wirelessly transmitting commands to the receiver of the external infusion device.

60. An infusion system according to claim 59, wherein the one or more remote commanders each have a unique identification code, and wherein the processor of the external infusion device includes the capability to store the unique identification codes of the one or more remote commanders, and wherein the one or more remote commanders and the external infusion device use the unique identification codes to substantially avoid interference with other remote commanders.

61. An infusion system according to claim 11, wherein the external infusion device is programmable to store one or more identification codes, wherein each remote commander transmits an identification code, and wherein the external infusion device only responds to commands sent from a remote commander that transmits an identification code that has been programmed into the external infusion device.

62. An infusion system according to claim 11, wherein the remote commander establishes non-line of sight communication with the external infusion device.

63. An infusion system according to claim 11, wherein the receiver includes a standby mode, and wherein while the receiver is in the standby mode the receiver does not receive.

64. An infusion system according to claim 63, wherein the receiver periodically becomes active to see if the transmitter is transmitting.

65. (Amended) An external infusion device for infusion of a liquid into a body of a user, the external infusion device comprising:

 a housing containing a reservoir, wherein the housing is adapted for use on an exterior of the body;

 a processor coupled to the housing; and

 a vibration alarm used in conjunction with the processor to provide one or more tactile sensations to a user.

66. An external infusion device according to claim 65, wherein the vibration alarm provides one or more tactile sensations to the user in response to a low reservoir alert.

67. An external infusion device according to claim 65, wherein the vibration alarm provides one or more tactile sensations to the user in response to a communication from a remote commander.

68. An external infusion device according to claim 65, wherein the vibration alarm provides one or more tactile sensations to the user in response to one or more commands to change one or more operations of the external infusion device.

69. An external infusion device according to claim 65, wherein the vibration alarm provides one or more tactile sensations to the user during a period that the infusion device is in a suspend mode.

70. An external infusion device according to claim 52, wherein the at least two personal delivery patterns are programmable by a user.

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71. An external infusion device according to claim 52, wherein the keypad is used to program the at least two personal delivery patterns.

72. An external infusion device according to claim 52, wherein the selected one of the at least two personal delivery patterns repeats daily.

73. (New) An external infusion device for infusion of a liquid into a body, the external infusion device comprising:

a housing adapted for use on an exterior of the body;
a receiver coupled to the housing for receiving remotely generated commands;
a processor coupled to the housing and the receiver to receive remotely generated commands and to control the external infusion device in accordance with the commands; and
an indication device to indicate, independent of an RF transmission, when a command has been received and indicate when the command is being utilized to control the external infusion device such that the external infusion device is capable of being concealed from view on an individual when being remotely commanded.

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